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birds will suddenly return to the fissures in the rocks, and there seems to be nothing that will cause them to leave their selected roosting cavities. In the district lying within four miles around Slover Mountain I have never seen the swifts more than one mile distant from it.

During the extremely cold wave of early January, 1913, eight, to me perfectly healthy, swifts were taken out of a crevice where they, with many others, seemed to be roosting in a dazed or numb state. They were kept in a room for about six hours and then turned loose, one at a time, a few hundred feet from the point where they were captured. All flew away in a dazed fashion and nearer the ground than usual and none were observed to return to the place where they were captured. I had hitherto thought that they were numb from the cold, or possibly from the jar of a blast in their immediate vicinity; but it has been suggested to me that possibly they were hibernating. This raises a very interesting question, as it seems possible that these birds have intermittent hibernation periods. The facts are that these birds are not observed for many days in the coldest weather, yet are found to be plentiful within the rocks, in a dormant state.

It is claimed by some that these birds do not use their wings in unison, but I am of the opinion that they do flap both wings at the same time, at least part of the time if not always. When flying about feeding upon insects, usually at several hundred feet elevation above the ground, they make a few rapid beats with the wings, then soar a little while, then beat their wings rapidly for a few moments and so on. They vary the flight by sharp darts in other directions, probably to catch insects. When returning to the cliffs they often keep their wings beating fairly steadily. Both when penetrating and leaving the crevices they seem to use both their wings and feet as aids to locomotion.

Set no. 3 was donated to the United States National Museum (Accession 60163), where it proved the first set of eggs of this species in that institution. Set no. 5 was donated to the American Museum of Natural History where there had been no eggs of the White-throated Swift previously. Set no. 4 was donated to the California Museum of Vertebrate Zoology (now no. 1632 of the oological collection there).

Colton, California, November 14, 1916.

BIRDS OF THE HUMID COAST

By FLORENCE MERRIAM BAILEY

I. FISHERMEN

THE HUMID COAST of the Northwest appeals to the imagination of the worker from the arid interior not only because of its phenomenal forest growth—its bearded giants towering from one to two hundred feet above an almost impenetrable jungle—but because of the ornithological antitheses that result from the juxtaposition of ocean and forested mountains in northern latitudes.

On Tillamook Bay in northwestern Oregon, reached from Portland by winding down through the Coast Mountains with their lofty conifers and their canyon streams frequented by Water Ouzels, the shore that is strewn with the trunks of headless giants is so close beset by the living forest that the bird stu-

dent may hear Gulls and Cormorants with one ear and Pileated Woodpeckers and Varied Thrushes with the other. And in this region of the Douglas fir and the long-fingered Sitka spruce, birds that in the Sierra Nevada and Rocky Mountains are encountered only when one has climbed to altitudes well up among the thousands are here found at sea level—birds such as Crested Jays, Olive-sided Flycatchers, Rufous Hummingbirds, Sooty Grouse, and Nuttall Sparrows.

The Nuttall Sparrows, whose half brothers the White-crowns we had found on their breeding grounds in the high Sierra of California and from 11,000 to 11,600 feet in the Rockies of New Mexico, were abundant at sea level on Tillamook Bay. In the fishing village of Garibaldi, in June, 1914, they were as familiar as Chipping Sparrows, catching insects along the sidewalks with little regard for passers-by. Across the bay at Bay Ocean—named literally from its two shores—the Nuttall Sparrows sang from the tips of the wind-dwarfed bushes covering the face of the bluff actually overlooking the Pacific. Their song, rich, grave, and uplifted, went well with the strong wind from over the sea, with the wide expanse of ocean, and its horizon line of sky. Below them, while Gulls flew slowly by, their shadows cast on the sands of the shore and lines of black forms winged their way silently on toward the rocky islets beyond, from out in the ocean the white-maned sea horses came trooping in, rank on rank, down the length of the shore.

After severe ocean storms Fulmars and other rare sea birds are found on the beaches, and along the sand-spit beyond Bay Ocean many stray water fowl were seen. Not many miles down the coast, in Netart's Bay, stand the well known picturesque Three Arch Rocks now held by the government as a Bird Reserve for the preservation of their remarkable colonies of water fowl. Moving pictures of these Petrels, Puffins, Gulls, and the myriad Murres that may now nest in security on their native rocks have been taken by Mr. Finley for the educational work of the Oregon Fish and Game Commission; and Dallas Lore Sharp in his delightful book, "Where Rolls the Oregon," tells of a night spent on the sea-bound rocks among their restless populace.

In Tillamook Bay there are no rocks large enough to house bird colonies, and in June the only common birds seen about Garibaldi were Gulls and Cormorants. At low tide at the wharf, where a pair of Kingfishers sometimes came for small fry, diving in the zigzagging reflection of the piles, gray-backed Western Gulls and their confreres gathered familiarly, pluming themselves on the sunlit piles or standing idly on the shore where the fishing boats lay at anchor, and streamers of sun-illumined seaweed floated below the surface.

The birds made themselves so much at home that the fishermen had to protect their clams and crab boxes from them. One of the men before realizing the necessity had dug a sack of clams and, not wanting to stop to wash and put them in his boat, threw them down on shore, hurrying away to dig another sack full. While he was gone the Gulls came and cleaned out the whole pile, opening the shells and cleaning them so expertly that not a particle of meat was left. As the man remarked philosophically, "That learnt me not to dump them down that way, where they can get a hold on them." Though the Gulls open the blue clam shells without trouble, they cannot open the cockles, the fisherman said, and have to resort to the same expedient that Ravens sometimes do, carrying the shells up into the air from fifty to a hundred feet and dropping them so that they break open when they strike the

beach. The large square crab boxes tied up at the wharf full of the huge squirming Tillamook crabs for which the country is noted, have to be securely covered to keep the Gulls out, for as the fisherman told me, "they swipe a crab as quick as they would a clam."

While the Gulls have to be reckoned with in such minor ways, the villages, as the people fully realize, would be uninhabitable were it not for the birds. In the fall the salmon that have come into Tillamook Bay go up the creeks to spawn and when they die are washed down by the high water along the creeks and along the shore, sometimes, as the fisherman assured me, "you might say by the thousands"; and he added realistically, "I've seen the little creeks so thick you couldn't see the bottom." At this perilous moment the Gulls gather, and acting as scavengers save the day for the villagers. A large salmon run was predicted the year of my visit because the water was deep on the bar—twenty-one feet at low tide—so that the fish could get in easily. The Tillamook squaws endorsed the prediction because—there was a large crop of salmon berries!

In the dull season the Gulls sometimes steal fish from their Cormorant neighbors, expert divers who come up with small fry temptingly exposed in their bills. When down on the shore one day, hearing a hoarse cry I looked up just in time to see one of the black-bodied Cormorants shake off a white-breasted Gull and then raise its bill and swallow, its catch safe from all pilferers.

It was interesting to watch a Cormorant come down the bay, flying steadily low over the water with its long neck curved up, to light heavy bodied and rapidly sink to a black hook, only its small head and long neck visible. When both Gulls and Cormorants were out in the bay the scene was always shifting. One moment there would be a row of black hooks and a row of white breasts. Then the black hooks would tip forward and Grebe-like disappear under the water. But if I glanced away, on looking back again, there would be the row of black hooks. Twenty-five Cormorants I counted in line at one time, but on the instant a band of Gulls unceremoniously plumped down among them and instead of the orderly black row, there was a confusion of white wings and black necks.

Down the shore a white line of Gulls feeding on a mud flat would rise and shift back and forth calling, and when the flock finally broke up and drifted my way, a band passed over my head so white against the deep blue sky that it was a thrilling sight. Small squads scattered over the beach, one of them gathering around a little clam pile near by, the handsome adults with their pure white bodies, dark gray mantles, and yellow bills, the young with mottled brownish bodies and black bills. One poor bird with a broken leg pecked at the already emptied shells in a desultory manner, but the rest for the most part stood around playing or teasing each other, crying out in loud Gull tones with their wild sea quality.

An occasional Barn Swallow went skimming low over the beach, the beach where lay old gray logs higher than I could reach, dethroned monarchs from the noble mountain forest up the coast, and below them the sand was wreathed with streamers of fine green seaweed that had drifted in with the tide, ripple marks, Gull tracks, and empty clam shells each adding a line to the complex, fascinating story of the meeting of these children of mountain, sea, and air.

Down along the water's edge, oblivious of the crowds of Gulls and rows of Cormorants, a Great Blue Heron, a solitary fisherman absorbed in his pursuit,

stalked slowly up and down the shore. A second Heron that was perched on a snag far out in the bay was presumably his mate, angling in other waters. From my distance the outlines of the fisherman by the shore were three long sticks—neck and legs—for the shadowy form of the body faded into the water of the bay with its blues and greens and white caps. The only conspicuous feature was the long white neck. When walking along shore the Heron with long neck craned forward statuesquely would suddenly sprawl onto the water, rising with a tiny fish in its bill which it would shake persistently, the sun glancing from the scaly sides and also from the wet side of the bird's own head. When the great Heron flew, its slender form opened to broad gray, black-margined wings, and it flapped on and on till it disappeared down the hazy shore toward the safe harbor of a woodland creek leading back to the mountains.

II. A VISIT FROM A SOOTY GROUSE

Between the mountains and the shore there is a strip of dense forest, and as we wandered along the road bordering it, looking for a possible habitation, to our amazement we found a broad board walk leading up through the forest. A Golden Pileolated Warbler enticed us up its woodland vista, flashing gold in and out of the greenery. What could be the explanation of this broad highway through the timber? Where would it lead us? We followed it between a stand of spotted mossy alder trunks and heavy-topped hemlocks and Sitka spruces filled in with a dense growth of glossy green salal, of skunk cabbage whose huge shining leaves rose two or three feet above the ground, of purple elderberry, and red huckleberry bushes, of a luxuriant growth of tall salmonberry, and round-leaved vine maples whose red-winged seeds give the effect of red fruit in the tops of the small trees, together with bracken and clusters of high ferns that occupied the remaining crevices and niches. The charred trunk of a huge spruce felled and burned back to make way for the walk, and pools standing in deep hollows left by upturned roots, huge gray roots that made a chipmunk look like a mouse, told how man had wrestled with the forest. If we stepped off the walk and essayed to penetrate the jungle, the crossed prostrate trunks of enormous primeval trees, cut twenty-five years before, disputed the way and the dense tangle of vegetation added such difficulties that we were glad to get back to the open highway.

At the head of the board walk, much to our surprise we faced a large two-story school building surrounded by cleared grassy acres. Set in the forest on the edge of a small fishing hamlet, it seemed strangely out of place but—as I learned later when the family in the house near the school had kindly taken me in—it was one of Oregon's modern schools gathering its children from other hamlets. The board walk that had bespoken prodigal extravagance before, with this explanation became a bare necessity; for how else could children come and go through the water-soaked forest during the nine months of the rainy season?

On occasion, as I discovered, the board walk proved convenient for birds and was also an attractive highway for roaming cattle, for by the Oregon law they may go where they will, objectors having the privilege of fencing against them! Even a perambulatory bear had found the walk more convenient than clambering up and down the log-blocked woods—woods that it cost five hundred dollars an acre to clear!

A spruce stump beside the school house measuring nearly twenty-four feet

in circumference bespoke the difficulties encountered. While the main part of the forest had been cut or burned twenty-five years before, a few of the original two-hundred-foot trees had been left standing because too knotted to make good timber, and the second growth of spruce and hemlock had now reached a height of a hundred feet.

The acres adjoining the school had been cleared of bracken and timber by a carpenter who, after building the Life Saving Station on the bay, discovered the school and settled beside it, that advantages missed in his own youth might be afforded his little daughter. In front of the house a dead tree, one of the kings of the original forest, marked the clearing from above and below, for although it had lost its top its shaft, estimated at two hundred feet, rose proudly into the air above the adjoining timber, while the trunk about five feet from the ground had a girth of over twenty-nine feet.

Around the school house, even in vacation, the birds proved to be suggestively shy; but one morning a rare visitor, a Sooty Grouse, strayed into the clearing from the woods. She was first seen flying into a young spruce by the house, and the family were called to look at her. The spruce was so dense and its mossy cushions made so many dark Grouse-like spots that, crane our necks as we might, we could not find her. The fisherman who had seen her fly in told us that he had once hunted half an hour trying to see a cock hooting over his head! Discouraged by this we gave up looking, but before long I heard the fisherman calling in some excitement for "the woman"—interested in ornithology—to come out again.

There was the Grouse, secretive inhabitant of dusky forests, out in the glaring light of day, perched on the ridgepole of the school house surrounded by grassy acres, to us the most conspicuous object in the landscape, though her body matched the slaty shade of the roof. The explanation was simple. Tom, the big house cat, had flushed her from the grass, in the excitement of the chase, as the witness declared, actually jumping up into the air after her. There she sat, or rather crouched, with pointed head projecting beyond the ridgepole on one side of the roof, and long banded tail hanging over the other. The cat was still prowling about and when the excited little Goldilocks chased him off, the old Grouse moved her head and raised up as if meditating flight, but, as if deciding that the child was harmless, sat down again. When the fisherman approached and levelled his long spy glass at her, however, she opened her wings and flew across the school lot, disappearing in a high spruce.

Where were the young? She had doubtless brought them to the open school lot to feed, as the carpenter imagined. She would have to come back and gather them together again. To get a good view of the tree into which she had flown and from which she must come, I walked over to the school house steps and sat down to wait. And still I waited. Then the two men of the house with gun and wheelbarrow followed by Goldilocks and her two white Spitz dogs passed by and clattered down the board walk out of hearing, after which there was unbroken, reassuring silence. At last I heard a low familiar *cluck-uck-uck-uck*, and out came the Grouse, flying across the entire length of the school lot into the woods at its head, as if scouring the ground for her chickens. Where could they be? Why didn't they answer her? After a little, back she came to the woods at the foot of the lot, still without a sign, that I could note. This time, after she lit among the shadows of a high spruce branch, by close scrutiny her pointed head and dusky form could be distinguished.

Again she called softly to her invisible little ones—*kit-ty-kit-ty-ough'*—and then to my astonishment flew out, almost straight at me, as it seemed, and up onto the school roof again, her feet rapping the shingles as she lit. From that height she could command the whole grassy lot and hear the least faint piping voice. Once more she called anxiously as if thinking of the black cat. To watch her movements better I changed my position. Whether the old Grouse heard me or at last discovered her brood near the woods and while my back was turned led the chicks to cover, I can never know, for although I waited a long time, and looked eagerly on subsequent days, neither she nor the chickens reappeared. The carpenter's prediction had doubtless been fulfilled—“She'll take her young ones into the woods if she finds the cat is after them.”

The Oregon Ruffed Grouse were formerly plentiful here. Ten or twelve years ago, the hunter told me, “there used to be lots of them—we used to take the gun out and get all we wanted of them.” But, he added, “they are getting thinned out now,” only a few being seen when hunting, and those “way back in the hills.”

(*To be continued*)

THE TOWNSEND SOLITAIRE

By FORREST S. HANFORD

JOHN MUIR in his charming book on the Sierras of California writes at length about the Water Ouse: “He is the mountain streams' own darling, the hummingbird of blooming waters, loving rocky ripple-slopes and sheets of foam as a bee loves flowers, as a lark loves sunshine and meadows. . . . For both in winter and summer he sings, sweetly, cherrily, independent alike of sunshine and of love, requiring no other inspiration than the stream on which he dwells. While water sings, so must he, in heat or cold, calm or storm, ever attuning his voice in sure accord; low in the drought of summer and the drought of winter, but never silent”.

The Solitaire, on the other hand, except for an occasional song during the nesting season, is invariably silent, reflecting his surroundings to a remarkable degree—a dim gray spirit of a bird flitting quietly through arched aisles of the coniferous forests. He is the reigning genie of the shadowy nooks, the remote solitudes; his favorite haunts the dark cathedral-like groves of alpine firs, ranging downward into the sunnier, more open pineries of the lower Sierras. He prefers the calm margin of a dreaming lake rather than the swift tumult of rivers, a sheltered cove in a quiet place to commotion and din. One does not discover the Solitaire through any effort on his part to make himself conspicuous or a nuisance like the jay, nor when his solitude is invaded does he resent your presence by scolding or chatter. His is rather a disposition at once sweet and tolerant; you take to him instantly and he accepts you at your true value, going about his business in his ordinary shy manner, showing neither distrust nor fear unless startled by an abrupt movement or loud sound.

So rare a singer is the Solitaire that during my mountain rambles, extending over a period of thirteen years, I have heard the song on only five occasions, which will long be remembered from the nature of the surroundings and the delightful melody of this dweller in the silent places. The first time was